

**Notice of Allowability**

Application No.

10/670,544

Examiner

Julie Anne Watko

Applicant(s)

WIESEN ET AL.

Art Unit

2627

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the RCE filed 07/25/2007.
2. ☒ The allowed claim(s) is/are 19-38, 40, 41, 43-50 and 52-54.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All b) ☐ Some\* c) ☐ None of the:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
  - \* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
  - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
    - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
  - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08),  
Paper No./Mail Date \_\_\_\_\_
4. ☐ Examiner's Comment Regarding Requirement for Deposit  
of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413),  
Paper No./Mail Date \_\_\_\_\_
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_

### REASONS FOR ALLOWANCE

1. The following is an examiner's statement of reasons for allowance:

The prior art of record neither shows nor suggests a pair of shields, one on either side of a GMR spin valve stack, with one of the shields being formed to include integral side shields that substantially enclose a free layer between the pair of shields, said GMR spin valve stack including a pinned layer and a free layer, in combination with the specific longitudinal biasing structures (such as exchange bias material or insulated permanent magnet material in the claimed locations) recited in the various independent claims.

The use of integral side shields with a GMR spin valve stack is known (see Hasegawa, US PAP No. 20030174446 A1, Figs. 8-9).

The use of integral side shields with insulated permanent magnet longitudinal biasing structures is also known (see Fontana Jr. et al, US Pat. No. 7016167 B2, especially Fig. 7, which shows a spin valve transistor with a free layer ("free layer 15", see col. 6, lines 42 and 47-48) but without a pinned layer; see also Takano, US Pat. No. 7123454 B2, especially Fig. 15, which shows a TMR 45).

**Although a person of ordinary skill in the art would have been motivated to add side shields (in order to make flux attenuation more effective, to suppress off-track side reading and to increase trackwidth resolution as taught by Fontana Jr. et al, US Pat. No. 6680832 B2, see col. 2, lines 39-44; see also col. 3, line 56-col. 4, line 2) to a GMR having the well-known longitudinal biasing structures recited in the various independent claims, the combination would not have been predictable** (see Hasegawa, US PAP No. 20030174446 A1, especially ¶ 0187, "In the eighth and ninth embodiments shown in FIGS. 8 and 9, the bias layer 26 must be

stacked on the free magnetic layer 24 because hard bias layers cannot be disposed at the two sides of the free magnetic layer 24 in the track width direction.”; see also ¶ 0091, “distance between the side end face 33a and the side shield layer 35 in the track width direction ... is optimized. ... By controlling the thickness of the insulating layer 34, the increase in effective read track width is properly inhibited.”; see also Fontana Jr. et al, US Pat. No. 7016167 B2, col. 7, lines 9-18, “thickness of the hard bias layer 30 is a factor with regard to free layer 17 pinning strength. ... hard bias layer 30 cannot be too thick because this would increase the space between the lead 35 and the free layer 17, which would essentially pin the free layer 17 in one magnetization direction preventing it from flipping freely. Likewise, a hard bias layer 30, which is too thin results in not enough pinning strength, causing an unstable sensor”).

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled “Comments on Statement of Reasons for Allowance.”

2. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

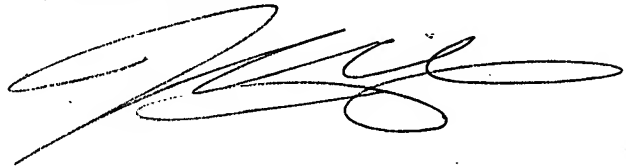
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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Julie Anne Watko whose telephone number is (571) 272-7597. The examiner can normally be reached on Mon & Fri, 9:30AM to 7:30PM, Tues-Thurs after 5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dwayne D. Bost can be reached on (571) 272-7023. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Julie Anne Watko  
Primary Examiner  
Art Unit 2627

September 15, 2007  
JAW

A handwritten signature in black ink, appearing to read 'Julie Anne Watko', with a stylized, flowing script.